CPSC 1155 – Lab 11
C++ Arrays

Learning Objectives

The goal of this lab is to learn C++ Arrays.

Lab Procedure

For each problem statement, follow the steps below:

1. Read the problem statement and clarify the problem.
2. Write a C++ function as required.
3. Test, debug, and execute the function using typical values.
4. Make sure to use a comments header to reflect the intention of your program and name of the author (you) and the date the program was written.
5. Submit according to the instructions in the "Lab Submissions" section.

Problem Statements

Write a C++ program (main function) that declares an array as follows:

```
const int SIZE = 10;
int myList[SIZE];
```

For each of the following, write a C++ function. Call the function for myList in your main program.

1. Write a function that receives an array and **initializes** the elements of the array with random values between 0 and 9 inclusive. Call this function in main to initialize myList.
2. Write a function that receives an array and **prints** the elements of the array. Call this function in main to print myList.
3. Write a function that receives an array and finds the **largest element** in the array. Call this function in main to display the largest element for myList. [Hint: Assume the first element is the largest and compare the remaining elements with the largest.]
4. Write a function that receives an array and finds the **smallest index** of the largest element of the array. Call this function in main to display the smallest index of the largest element for myList.

   Note: If the largest element is repeated more than once, there will be a smallest index (the first appearance of the number) and a largest index (the last appearance of the number). For example, for myList[10] = {3, 4, 5, 4, 6, 5, 3, 2, 6, 5}, the largest is 6, the smallest index of 6 is 4, the largest index of 6 is 8.
5. Write a function that receives an array and finds the **largest index** of the largest element. Call this function in main to display the largest index of largest element for myList.
6. Write a function that receives an array and **shifts** the elements of the array one position to the **left** and stores the results in a **new array**. The first element will move to the last position. Call this

function in main to create the new array for myList. Use print function to print the new array. For example, for myList[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 0}, the new array will be {2, 3, 4, 5, 6, 7, 8, 9, 0, 1}.

7. Write a function that receives an array and **shifts** the elements of the array one position to the **right** and stores the results in the **same array**. The last element will move to the first position. Call this function in main to shift the elements of myList. Use print function to display the new array.
8. Write a function that receives an array and a value, **searches** the array for that value, and returns the **index** where the value was firstly found. The function returns -1 if the value does not exist in the array. In main, generate a random value between 0 and 20 inclusive. Call this function to search for the random value in myList. Display an appropriate message if the value is found or not found.

Lab Submissions

Write all your codes and comments in one .cpp file named as yourName_lab11.cpp and submit to Brightspace by due date.

Please make sure that the .cpp file compiles and runs properly before submission. Your file must run properly in order to receive full marks.

Each question has 5 marks.